

mounting birds and mammals, given very briefly, but probably with sufficient detail to serve as a guide to beginners. The author appears to be a dealer in natural history accessories, and the book has rather the aspect of a trade advertisement from its recommending the almost exclusive use of a "preservative" prepared and sold by the author, the composition of which he keeps secret. As a practical guide to English collectors in foreign countries it is very inferior to Mr. Ward's "Sportsman's Handbook," which was reviewed in NATURE last year (vol. xxviii. p. 146).

A. R. W.

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

#### The Meteorological Council and Falmouth Observatory

THE Meteorological Council contemplate closing on December 31 next the Primary Observatories at Glasgow, Armagh, Stonyhurst, and Falmouth, which have been in full operation since 1868, and continuing only those at Kew, Aberdeen, and Valentia.

The Falmouth Observatory has a geographical position which insures it the first record from the south, and the position of the instruments is considered satisfactory by scientific men. It is superintended and managed by the Royal Cornwall Polytechnic Society, who for the small sum of 250*l.* per annum provide suitable buildings, an observer, assistant observer, gas, and the other necessary outgoings, thus supplementing by local effort the Treasury grant.

The Meteorological Office have been satisfied with the manner in which the Observatory has been managed. The accompanying report, which Prof. J. Couch Adams of Cambridge sent to the Meteorological Council at their own request, denounces, on scientific grounds, the retrograde step contemplated by the Council, and I am requested by my Committee to invite through you the assistance of scientific men generally to prevent the discontinuance of so important an observatory as the one at Falmouth.

EDWARD KITTO,

Secretary to the Royal Cornwall Polytechnic Society  
Falmouth, July 30

Copy of the Document submitted to the Meteorological Council by  
Prof. J. Couch Adams, F.R.S., on July 5, 1883.

To the Members of the Meteorological Council.

In compliance with the wish expressed by some members of the Council at the interview of June 27, I have great pleasure in explaining my view on the matter then discussed more fully and clearly than I was able to do *vis à voce*.

1. First I will say a few words about the relative value from a scientific point of view of a continuous record of meteorological phenomena when compared with occasional observations of the same phenomena.

In my opinion the continuous record would be in this case incomparably the more valuable. When we know the laws of variation of an observed quantity, occasional observations at intervals which may be settled beforehand are sufficient to determine all the constant quantities which enter into the expression of the law. On the other hand, when the law of variation is in a great measure or altogether unknown, as is the case with most meteorological phenomena, a continuous record may throw more light on the law or laws of variation than would be afforded by any amount of occasional observations.

I have no hesitation in expressing my belief that if we ever attain to a knowledge of the principal laws which regulate the weather, it will be as a result from continuous records, and not from occasional observations.

2. In the second place, in order to study the laws of variation of any particular phenomena, it is important to have continuous observations at different places which are not so far distant from each other as to make the circumstances of the phenomena at the different stations differ too widely from one another.

In this way only will it be practicable to study and trace the progress of a wave of disturbance of any kind across a given country. From this point of view I do not think that seven stations judiciously distributed over the surface of the British Isles are at all too many. Hence I should regard the proposed abandonment of four out of these seven stations as a retrograde step which is greatly to be deprecated.

3. In the first place I come to the circumstances which relate to the Falmouth Observatory in particular. The unique situation of Falmouth, nearly at the mouth of the English Channel, and considerably to the south-west of any of the other meteorological stations will render continuous observations made there peculiarly valuable. Most of our storms and other atmospheric disturbances come from the south-west, and therefore they would first affect and be recorded by the instruments at Falmouth. Valentia is the only other station which can compare with Falmouth in this respect, and I should consider the observations at Falmouth more valuable, as its more southerly situation enables us better to trace the progress of any disturbance across the southern and the central parts of England by comparison with other observations in those parts, while Valentia is too much to the north to answer this purpose.

4. Next I will consider the objection which has been brought against further continuing these observations, viz. that they have already been continued for twelve years, and nothing of importance has been deduced from them. Considering the complicated nature of the phenomena we are concerned with, it is not to be wondered at that little or no progress has been made in twelve years in unravelling their laws. Even in astronomy, if the fate of the Greenwich Observatory had depended on the results deduced during the first twelve years of its existence from the observations made there, the consequences to the progress of the science might have been disastrous. The fact that we already have twelve years' continuous observations at a given place makes any additional observations at the same place much more valuable. Thus twenty-four years' continuous observations at the same place would be much more valuable for any theoretical deductions than twelve years' observations at one place and other twelve years' observations at a different place.

5. There can be no doubt that one of the principal astronomical conditions by which meteorological phenomena are affected consists in the varying motion of the moon in declination, and this again depends on the position of the moon's node, which takes between eighteen and nineteen years to perform a complete revolution.

Hence it would be desirable that meteorological observations should be continued at the same place during one or more revolutions of the moon's node.

This is already well recognised to be necessary in the case of tidal observations. And here I may incidentally remark, though it does not directly affect the Meteorological Council, that Falmouth would be a very important station for making continuous observations of the tides.

6. If the present grant were withdrawn from the Falmouth Observatory, the Cornwall Polytechnic Society have not the means of keeping it up, and the abandonment of the Observatory would be a heavy blow to the cultivation of meteorological science in Cornwall and the West of England generally, where there are many local stations which regard Falmouth as their scientific centre. This is a matter which ought not to be indifferent to the Meteorological Council. No doubt it is no part of the duty of the Council to subsidise local efforts, unless indeed by means of such efforts the objects of the Council can be better and more economically carried out than would otherwise be done. I submit that this is the case in the present instance. The difference between the expenditure at Valentia, where the Meteorological Office has to defray the whole cost of the establishment, and the expenditure at Falmouth affords some indication of the advantages to be derived from local efforts.

7. Lastly, if it is absolutely necessary to reduce the expenditure on some branches of the work undertaken by the Meteorological Office, it may be inferred from what I have already said that in my opinion the continuous records are almost the last branch in which any reduction should take place.

(Signed) J. C. ADAMS

#### Determination of "H"

It has occurred to me that the following notes of a rough determination of the value of the horizontal component of the

earth's magnetism, according to the method described by Mr. Andrew Gray (*NATURE*, vol. xxvii. p. 32), might not be without interest to some readers, as showing the amount of accuracy which can be obtained. The experiments were made by one of my students at this College about four months ago.

The form of reflecting galvanometer which lends itself best to these experiments is one devised by Prof. Stuart, in which the needle is centrally situated between two rectangular pieces of wood carrying the coils. To the sides of these, two boards can be easily attached by brackets, so as to be in the same plane as the needle, and quite horizontal, and in this position do not interfere with the light falling upon or reflected from the mirror. The reflecting magnet is then north or south of the needle, and perpendicular to it.

The magnets were made from thin knitting needles (about No. 19, B.W.G.), cut to the proper length, and made glass hard. They were made in two lengths, 8.5 and 12.5 cm., but the longer ones were slightly warped in hardening, and did not give concordant results. The scale was at a uniform distance of 62.5 cm. from the mirror, and in reading the deflections four observations were made and again repeated after noting the times of oscillation, as described by Mr. Gray. Each of the deflections given below is therefore the mean of eight observations.

The following are the details of the experiments :—

Denomination of magnet.	A.	B.	C.
Length ... ..	8.5 cm.	8.5 cm.	8.5 cm.
Weight ... ..	0.6760 grm.	0.6924 grm.	0.6900 grm.
Time of oscillation..	4.88 sec.	4.71 sec.	4.76 sec.
Deflection at 15 cm.	7.1 cm.	7.7 cm.	7.6 cm.
„ 13 „ 10.6 cm.	11.5 cm.	11.2 cm.	

From these results we obtain, by aid of the formula :—

$$H = \sqrt{\frac{4}{3} \frac{\pi^2 l^2 w}{(r^2 + l^2)^{\frac{3}{2}} T^2 \tan \theta}},$$

the following values for  $H$  :—

0.17705  
0.17635  
0.17828  
0.17754  
0.17725  
0.17770

$$\text{Mean} = 0.17736 \pm 0.00048,$$

showing an amount of accuracy which may, I think, be compared with that obtained with much more expensive and delicate apparatus.

T. S. HUMPIDGE

University College of Wales, Aberystwyth, June 27

### The Lachine Aërolite

THE most remarkable fall of an aërolite that has yet been recorded took place at Lachine, about eight miles from Montreal, on Saturday, July 7, 1883. I give the following account from the *Montreal Daily Star* of July 11 :—

"The fall of the aërolite transpired during a rain shower on the forenoon of Saturday, and there were no premonitory indications to show that the air was more than usually charged with electricity. The person who witnessed the fall of the aërolite more clearly than any one else was Mrs. Popham, wife of Mr. John Popham, insurance agent. Mrs. Popham was seated in her house up stairs sewing, when all of a sudden the apartment became illuminated with a blinding flash of light. The lady instantly glanced out of the window, when to her astonishment she beheld a huge mass of fire descending towards the earth in a diagonal direction. This brilliant body had a solid nucleus that appeared to the eye about four feet square, and a strange, indescribable noise was caused by its flight through the air. Simultaneously, as it seemed to Mrs. Popham, she received a paralysing shock that affected her from head to foot, as if the entire contents of a highly-charged battery had been discharged into her body at once. The astonishing brilliancy of the meteor caused a temporary loss of sight, and it was fully half an hour before the lady could distinguish surrounding objects. When Mrs. Popham first beheld the falling mass she fancied that it was about to strike the house, and is still of the opinion that it must have passed alarmingly close. The lady took several hours to recover from the shock, and when Mr. Popham returned home

several hours after he found her partially prostrated from its effects.

"Mr. McNaughton, a brother of Mrs. Popham, was sitting down stairs reading when the flash came. He jumped up, and, looking out of the window under the trees towards the river, he plainly saw the fiery ball strike the water at a little distance from the shore, causing a mountainous upheaval and sending splashes in every direction.

"Mr. Horace Baby also saw the glare caused by the flight of the meteor, although he did not actually see the body itself. He said that he felt a tremendous shock, and that he could feel the electricity oozing out of his finger-ends for some time after.

"Mr. C. P. Davidson, Q.C., was sitting down to lunch at the time, and describes the crash as being tremendous. The Rawlings family also felt the shock severely, as indeed did half the village. Mr. Popham's cottage stands about seventy feet from the water's edge at Stony Point, and it is thought that the aërolite fell into the stream about twenty or thirty yards from the shore, in about twenty feet of water. Owing to the high winds since the occurrence the water has been so muddy that it has been impossible to locate the whereabouts of the meteor. An attempt, however, will shortly be made to bring it to the surface."

I will send further details when they come to hand.

E. W. CLAYPOLE

New Bloomfield, Perry Co., Pennsylvania, July 15

### Cold and Sunspots

YOUR correspondent, Mr. C. J. B. Williams, is wrong in the statement he makes in *NATURE*, vol. xxviii. p. 103, concerning the cold in California in the month of March. The month was the warmest March we have had for some years, the mean temperature being 3.5 above the average, and 2.8 above the average for the whole of the Pacific coast. February, on the contrary, was a very cold month, the mean temperature being 3.6 below the average. I believe it will be found that the mean temperature of a hemisphere is not affected by sunspots. That the seasons, however, are influenced by the state of the sun's surface I have no doubt, but this only in a secondary manner. In a paper read before the California Academy of Sciences in 1870 (see *Proceedings*, vol. iv. p. 128), I pointed out that our extreme seasonal climates were caused by the prevalence of broad belts of north and south winds which would extend continuously from east to west for 1500 or 2000 miles, and would blow over the same surface for months together, causing extreme seasons with temperatures above the average where the south current prevailed, and cold winters where there was a northerly current.

As a general rule when there is a cold winter on the Pacific coast the winter in the Eastern States is mild. The following figures taken from the U.S. Meteorological Reports will illustrate what I mean :—

### Mean Temperature for February 1883

Below the Average		Above the Average	
North Pacific States ...	-4.3	North Atlantic States	+2.2
Middle Pacific region	-4.3	Middle Atlantic States	+4.3
South Pacific region ...	-2.1	Florida ... ..	+6.3

Thus while on the whole of the Pacific coast the temperature of the whole was from 4.3 to 2.1 below the average, on the Atlantic coast the temperature was from 6.3 to 2.2 above the average.

Towards the end of February the north current that had been prevailing over the western regions of the continent during the whole of the winter shifted to the east, and this change of longitude was accompanied by some of the worst cyclones that have visited the central and middle States for years.

During the month of March, whilst we were under the régime of a south current, the temperature in the Eastern States was low, the temperature in Massachusetts for March being 7.3 below the average.

My own belief is that the connection between the character of our seasons and sunspots will have to be worked out through the influence of the sun on the regional distribution of air currents.

San Francisco, Cal., July 3

JAMES BLAKE

### Intelligence in Animals—Can a Viper Commit Suicide?

HAVING occasionally caught a viper, and kept it for a time in a glass case, one of the platelayers called me last Thursday and said "there was a fine 'Long Cripple' (a local name for a